



United States Department of the Interior  
Bureau of Land Management

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**Environmental Assessment CO-110-2006-120-EA**

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## **Finding of No Significant Impact**

Chevron U.S.A.  
Oil Shale Research, Development and Demonstration

*Sixth Principal Meridian T3S, R97W, Section 5 NE/4, Lots 5, 6, 11, 12*

*Chevron U.S.A., Houston, Texas*

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U.S. Department of the Interior  
Bureau of Land Management  
White River Field Office  
73544 Highway 64  
Meeker, Colorado 81641

# **Finding of No Significant Impact and Decision Record**

## **CO-110-2006-120-EA**

### **REFERENCE**

Environmental Assessment Record CO-110-2006-120-EA, Chevron Oil Shale Research, Development, and Demonstration (COC-69165), Department of the Interior, Bureau of Land Management, White River Field Office.

### **INTRODUCTION**

The Bureau of Land Management (BLM), White River Field Office, has conducted an environmental analysis (EA) for a Proposed Action and Alternatives related to the leasing of 160-acre tracts of land administered by the Bureau of Land Management for the purpose of exploring the economic viability of shale oil extraction, and to conduct research on modern technologies as a means to extract the liquid fuels from oil shale in an environmentally responsible manner. As provided for by Federal Register notice 70 FR 33753-33759 (June 9, 2005), the BLM has solicited the nomination of parcels to be leased for research, development, and demonstration of shale oil recovery technologies as authorized in section 21 of the Minerals Leasing Act (30 USC 241). The initiative was further endorsed by Congress through section 369(b) and (c) of the Energy Policy Act of 2005, Public Law 109-58 (H.R. 6).

Chevron U.S.A., Inc. has applied to the White River Field Office of the Bureau of Land Management for a Research, Development, and Demonstration (RD&D) Oil Shale Lease together with any supporting rights-of-way pursuant to the BLM's authority to lease Federal lands for oil shale development under section 21 of the Mineral Leasing Act, 30 U.S.C. 241. The Proposed Action includes the construction, operation, and maintenance of an oil shale research facility located in the Piceance Creek Basin approximately 45 miles southwest of Meeker, Colorado.

Chevron has proposed a research project to evaluate the feasibility and commercial viability of in-situ oil shale development. The intent of this proposal is to achieve a "proof of concept." That is, while laboratory experiments and theoretical calculations indicate that various in-situ methodologies are viable commercial options, none have been thoroughly field tested to evaluate their practical application. The Proposed Action provides the opportunity to apply those specific technologies under field conditions. The project results will advance our knowledge of these methodologies regardless of whether or not they prove commercially viable.

Chevron's research will gather additional data on oil shale recovery using conventional drilling methods and controlled fracturing and heating technologies to convert kerogen to oil and gas. The intent of the Chevron proposal is to prove an in-situ development and production method that utilizes controlled fracture technologies to develop relative uniformity in the fractured material to facilitate more efficient shale oil recovery.

This methodology utilizes CO<sub>2</sub> injections to promote control of the fracture network, and to contain the process within a vertically and horizontally limited production interval. The BLM has concluded that analyzing Chevron's proposed recovery process is warranted and may advance knowledge regarding the commercial viability of in-situ technologies for hydrocarbon recovery from oil shale.

In addition to the Proposed Action, the BLM has analyzed the environmental impacts of the Proposed Action with appropriate subalternative mitigation measures applied to the project design. The analysis assesses the environmental consequences of the Proposed Action, enumerates alternative mitigation actions, and evaluates the consequences of the mitigation. The subalternative mitigation measures, in addition to the project design features of the Proposed Action, are intended to reduce the impacts to human health and environment and to minimize surface use conflicts. A summary of the mitigations associated with the Proposed Action, and additional mitigations associated with the alternative mitigation actions, is provided in table form in **Appendix A** of the EA.

The BLM proposes leasing a 160-acre tract located approximately 45 miles southwest of Meeker, Colorado and authorizing a plan of operations for an oil shale research, development, and demonstration project. The Chevron tract is situated on a ridge between Hunter Creek and Dry Gulch at elevations ranging from 6,560 to 6,660 feet.

The EA, if not attached, is available at the White River Field Office and incorporated by reference in this Finding of No Significant Impact (FONSI) determination. A mitigated alternative and a no action alternative were analyzed in the EA.

### **PLAN CONFORMANCE AND CONSISTENCY**

The Proposed Action and alternatives have been reviewed, and have been found to be in conformance with one or more of the following BLM Land Use Plans and associated decision(s):

The proposed project is subject to, and has been reviewed for, conformance with the White River Resource Area (WRRRA) Resource Management Plan (RMP) (43 Code of Federal Regulations (CFR) 1610.5, BLM 1617.3).

Name of Plan: White River Record of Decision and Approved Resource Management Plan (ROD/RMP).

Date Approved: July 1, 1997

Decision Number/Page: 2-6

Decision Language: "...At the discretion of the Secretary of the Interior, research scale lease tracts would be considered within lands available for oil shale leasing. Approval of research tracts would be based on the merits of the technology proposed."

The Proposed Action with Mitigation has been found to be in conformance with the WRRRA RMP and with the intent of the Energy Policy Act of 2005.

## **FINDING OF NO SIGNIFICANT IMPACT DETERMINATION (FONSI)**

Based upon a review of the EA and the supporting documents, I have determined that the project will not significantly affect the quality of the human environment, individually, or cumulatively with other actions in the general area. No environmental effects meet the definition of significance in context or intensity as defined at 40 CFR 1508.27 and do not exceed those effects described in the White River Resource Area RMP/FEIS. Therefore, an environmental impact statement is not required for this proposed RD&D project. This finding is based on the context and intensity of the project as described.

### **Context:**

The study area for cumulative impacts is the White River Resource Area (WRRRA). The WRRRA is managed by the WRFO. Of the 2.6 million acres of land within the WRRRA, the surface of 1,455,900 million acres is managed by the BLM (BLM, 1997). The primary human influences on the project area are oil and gas development, historic oil shale and nahcolite mining, and livestock grazing. Existing environmental conditions in the project area reflect changes based on past projects and activities. The project area is rural and relatively undeveloped but is experiencing growth related to energy development.

The project is a site-specific action directly involving 160 acres of land administered by the BLM. While the technology advanced by the Chevron oil shale research, development and demonstration project could have national, regional, and state-wide importance for its contribution to unlocking significant shale oil resources that could help to supply the Nation's future domestic energy needs, the Chevron project, in and of itself, is not likely to produce oil in quantities that would contribute to domestic supplies.

Estimates of the total past, present, and foreseeable future surface disturbance from oil and gas development and oil shale and nahcolite mining equate to 2.4 percent of the total area of the WRRRA managed by the BLM. Five Oil Shale RD&D Proposed Actions are located in the northern portion of the Piceance Basin, primarily on undeveloped land, all within the WRRRA. The 800 acres associated with these five Proposed Actions equate to 2.3 percent of all past, present, and future Proposed Actions, and 0.06 percent of the WRRRA managed by BLM.

### **Intensity:**

The following discussion is organized around the 10 Significance Criteria described at 40 CFR 1508.27 and incorporated in the BLM's Critical Elements of the Human Environment list (H-1790-1) and supplemental Instruction Memoranda, Acts, and Executive Orders. The following have been considered in evaluating intensity for this proposal:

#### **1. Impacts that may be both beneficial and adverse:**

The beneficial effects of the proposed RD&D project include the advancement of innovative technologies to explore and develop the abundant oil shale resources within the Piceance Creek Basin to meet the needs of our nation's future energy requirements.

Opting for a small-scale, staged, approach to oil shale development provides an opportunity to prove the concept of the technologies involved so as to ensure operation at economic and environmentally acceptable levels before expansion to commercial operations can be authorized on public lands. The Chevron RD&D project could add to the collective knowledge regarding the viability of an un-tested technology for use in oil shale development on a commercial scale.

The in-situ (in-place) technology proposed would not permanently modify the land surface, and if the RD&D efforts prove to be sub-economic, the project would be more easily dismantled and lands could be more easily reclaimed with minimal adverse environmental impact.

Adverse effects include the potential for impacts to soils, vegetation, water resources, wildlife, recreation, and visual resources that would occur during construction and operation of the Proposed Action with mitigation.

## **2. Degree of effect on public health and safety:**

The BLM has selected the Proposed Action with Mitigation, which is comprised of all of the design features, environmental commitments, permit requirements, and industry specifications and regulations included in the Proposed Action along with the mitigation measures provided in the subalternative for the construction, operation, and maintenance of an oil shale RD&D facility together with supporting access, utility rights-of-way, and lease issuance, as the environmentally preferred alternative. The Proposed Action with Mitigation achieves the balance of resource protection and beneficial uses of the human environment envisioned by the National Environmental Policy Act.

In contrast to previous oil shale development ventures, the small-scale RD&D program would have minimal impacts on the socio-economic infrastructure of local communities. Environmental commitments, and mitigation measures described in Terms/Conditions/Stipulations as part of this decision, would minimize any public safety effects during project construction and operation.

## **3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas:**

There are no prime farmlands, wild and scenic rivers, wilderness areas, National Landscape Conservation Areas, National Monuments, National Parks, or Areas of Critical Environmental Concern (ACECs) in the project area.

As described in the EA, impacts to floodplains and wetlands resulting from the power, communications, and natural gas pipeline right-of-way (ROW) crossing at Hunter Creek would be temporary and minimal. The Proposed Action with Mitigation requires monitoring of water quality to determine if hydrologic interactions lead to potentially adverse impacts. No cultural or heritage resources were identified on the 160-acre parcel nor on the associated ROW, and a finding of “no subsurface potential” was indicated in the March and April, 2006 cultural surveys.

The WRFO BLM extended an invitation to the Ute Indian Tribe to participate in the environmental assessment of the proposed oil shale RD&D project, but the Tribe declined the invitation as the parcel is neither within, or contiguous to, the Uintah and Ouray Reservation.

Monitoring and environmental commitments included in the Proposed Action with Mitigation will be developed prior to, and implemented during, project construction to minimize the potential for adverse impacts to scientifically significant paleontological resources, and will lessen adverse effects to public lands administered by the White River Field Office BLM.

**4. Degree to which the possible effects on the quality of the human environment are likely to be highly controversial:**

Public input regarding the Proposed Action has been solicited throughout the RD&D planning process. Representatives of the BLM, Rio Blanco County government, and the U.S. Fish and Wildlife Service, met or consulted informally at various times to discuss the potential impacts of oil shale development on the resources under their respective administration.

Public involvement included public scoping meetings held in local communities throughout the region, as well as in open house forums that provided opportunities for the public to view the technologies proposed and to interact with industry representatives. These open houses were held to inform the public of the interdisciplinary team approach to working with the third party contractors preparing the EAs for the RD&D proposals so as to provide consistency among the EAs and to allow shared impact analysis for regional resources. The open houses also provided additional public comment and Q&A opportunities. During the public comment periods, fifteen written comments were received: eight from members of the general public, two from educational institutions, two from environmental advocacy groups (one of which was a collaboration of comments from ten individual organizations), and the remainder were received from state and federal governmental entities. Many of the comments generally recognized that the Proposed Action offered an opportunity to better understand the oil shale resource without sacrificing important natural resources. Concerns were raised about impacts to surface and ground water resources, air quality, and wildlife resources. These impacts have been reduced or minimized to insignificance through the implementation of mitigation measures. Other comments were focused on multiple use management, suitable protective measures, and around concerns that the BLM environmental review be commensurate with the scope of the potential for commercial scale operations and incorporate statements on broad actions concerning the provision for conversion to commercial leasing and subsequent environmental and socio-economic impacts.

Based on the number and content of the comments received from the public, the effects of the RD&D project on the quality of the human environment are not considered highly controversial. However, the past oil shale boom and bust cycles, most recently the bust of May 2, 1983 which resulted in significant adverse impacts to the social and economic stability in Western Colorado, will increase the likelihood that a high level of public interest in the implementation, monitoring, and demonstration of feasibility associated with the RD&D leases can be expected.

**5. Degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risk.**

The Chevron proposal utilizes conventional drilling techniques and modified fracturing and heating technologies to convert kerogen to oil and gas. Anticipated effects on the quality of the human environment as a result of the proposed technology have been thoroughly identified, analyzed, and mitigated to an insignificant level.

Due to the nature of the RD&D project, some degree of uncertainty is to be expected. The small-scale approach of initiating research on 160 acre parcels reduces risk by providing an opportunity to field test operations at environmentally acceptable levels. The technology proposed by Chevron would disturb a total of 108 surface acres. Chevron has developed various response and mitigation plans as part of their approved plan of operations. When uncertainty about impacts to the human environment was identified in the analysis of the Proposed Action, comprehensive mitigation measures were identified and analyzed in the Proposed Action with Mitigation. In addition to project design criteria, BLM-required mitigation, and required monitoring and response plans, the permitting that accompanies lease approval also includes requirements from regulatory agencies that further mitigate uncertain aspects of implementing the project. The result is a series of built-in checks to address uncertainties associated with implementing the un-tested technology and incorporates adaptive measures to implement in the event that unknown risks are identified.

**6. Degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration:**

The Proposed Action with Mitigation is a site-specific action directly involving 160 acres of land administered by the BLM. Chevron U.S.A, Inc. has applied for a lease to be issued for a term of ten years with the option for an extension not to exceed five years upon demonstration to the satisfaction of the Authorized Officer that a process leading to production in commercial quantities is being diligently pursued. The lease is subject to conversion to a twenty-year lease upon documenting to the satisfaction of the Authorized Officer that it has produced commercial quantities of shale oil from the lease. The Lessee has the exclusive right to convert the research and development lease acreage to a commercial lease and acquire any or all portions of the remaining preference lease area up to a total of 5,120 contiguous acres. Additional NEPA analysis would be required prior to the decision to convert the RD&D lease to include the preference right acreage.

If implementation of the Proposed Action with Mitigation results in proving Chevron's proposed technology for in-situ hydrocarbon extraction from oil shale, this could affect future BLM actions with regard to future leasing of public oil shale lands, based on the outcome of the PEIS. The demonstration of the feasibility of Chevron's proposed technology could result in increased interest in using BLM-administered lands for energy production. However, this action does not represent a decision in principle about a future consideration.

The Energy Policy Act of 2005, Public Law 109-58 (H.R. 6), directs the Secretary of the Interior (the Secretary) to complete a programmatic environmental impact statement (PEIS) for a commercial leasing program for oil shale and tar sands resources on public lands with an emphasis on the most geologically prospective lands within each of the states of Colorado, Utah, and Wyoming. The BLM will base future decisions with respect to land use planning in three states and regulations for commercial oil shale leasing on that analysis. Those decisions will be made independently of this action, except insofar as results of Chevron's project may add to our information about in-situ technology.

**7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts:**

The study area for cumulative impacts is the White River Resource Area (WRRRA). The WRRRA is managed by the WRFO. Of the 2.6 million acres of land within the WRRRA, the surface of 1,455,900 million acres is managed by the BLM. Estimates of the total past, present, and foreseeable future surface disturbance from oil and gas development and oil shale and nahcolite mining are estimated to equate to 2.4 percent of the WRRRA.

A total of five Oil Shale RD&D Proposed Actions are located in the northern portion of the Piceance Basin, primarily on undeveloped land and all within the WRRRA boundary. The percentage of the five proposed tracts currently developed with pipelines, wells, research tracts, or roads was estimated by each of the consultants preparing the EA using aerial photography and site visits. The 800 acres associated with these five proposed actions equate to 2.3 percent of all past, present, and future proposed actions, and 0.06 percent of the WRRRA managed by BLM.

The Proposed Action with Mitigation would not individually have a significant impact on any natural resource within the Piceance Creek Basin or within the communities of the region. However, cumulative impacts to natural resources could occur as the Proposed Action with Mitigation operates in conjunction with other past, present, or reasonably foreseeable future actions, such as the expanding oil and gas production operations in Northwestern Colorado. These impacts would be long-term, but not permanent, would occur over a relatively small percentage of land when compared to the overall size of the WRRRA, and would not result in significant impact to any areas of historic, cultural, or biological importance.

**8. Degree to which the action may adversely affect district, sites, highways, structures, or objects listed on the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources:**

No districts, sites, or other properties eligible for listing to, or included on, the National Register of Historic Places was identified for the Proposed Action with Mitigation. Cultural investigations have satisfied the Secretary of the Interior's Standards and Guidelines for the identification of historic properties. No eligible historic properties were identified within the area of potential direct or indirect effects. On-site monitoring of excavation activities by qualified archeologists provided by the BLM will minimize the potential for adverse effects to heritage resources. The Proposed Action with Mitigation contains requirements and contingencies in the event that previously unknown cultural resources are identified.



**9. Degree to which the action may adversely affect an endangered or threatened species or its critical habitat:**

Field surveys were conducted on the 160-acre lease parcel and surrounding areas by qualified biologists in March of 2006 and found that no known federally listed animal or plant species and no preferred habitat for such species is present at that location.

A Biological Assessment (BA) has been prepared in compliance with Section 7(c) of the Endangered Species Act (ESA) and submitted to the U.S. Fish and Wildlife Service (USFWS). The USFWS will review the BA to assess the potential impacts of the Proposed Action with Mitigation on federally-listed endangered, threatened, proposed for listing, and candidate species. The analysis, results, and conclusions presented in the BA are based on surveys and research conducted by biologists contracted by the preparer and the BLM.

Based on the analysis of the impacts of the subalternative (the Proposed Action with Mitigation), the BLM has concluded that there would be “no effect” on all but five federally-listed endangered, threatened, proposed for listing, and candidate species. For the bald eagle, the BA indicated that implementation of the Proposed Action with mitigation may have the potential to disrupt winter foraging resulting in a conclusion of “may affect, not likely to adversely affect”.

Although no water depletion is anticipated for the Proposed Action, water used for drilling operations, dust suppression, and for personnel needs would be purchased from local contract water suppliers and trucked to the site. Average water usage for the proposed RD&D project is estimated to average 12 to 13 acre/feet per year. The BLM has concluded that this would constitute a “may affect, not likely to adversely affect” determination for four endangered Colorado River fish species.

New projects involving a depletion of less than 125 acre-feet per year are required to pay a one-time fee to cover the annual depletion. While no depletion is anticipated, the estimated water usage for the proposed action is significantly less than 125 acre-feet per year. The project would result in estimated average water use of 13 acre-feet per year. If this use constituted a depletion, BLM would reinitiate consultation with the USFWS as agreed under the minor water depletions Programmatic Biological Opinion, which addresses water depletions of less than 125 acre/feet per year.

**10. Whether the action threatens a violation of federal, state, or local environmental protection law:**

The Proposed Action with Mitigation violates no federal, state, or local environmental protection laws.

Potential resource conflicts were resolved through environmental commitments and monitoring stipulations defined in the Proposed Action with Mitigations.

These commitments and stipulations were developed during project planning involving all participants in the RD&D project and during ongoing consultations with the Colorado Department of Wildlife, US Fish and Wildlife Service and the Rio Blanco County government.

To continue to meet air quality standards the BLM would require the operator to continue to cooperate with existing atmospheric deposition and visibility impact monitoring programs. The need for, and the design of, additional monitoring could include the involvement of the EPA Region 8 Federal Leadership Forum (EPA, 2001) and applicable air quality regulatory agencies.

To maintain water quality compliance the operator will install groundwater monitoring wells and collect surface water data, to develop a water monitoring and response plan for both surface and groundwater.

**Recommended by:**

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White River Field Office Manager

\_\_\_\_\_  
Date

**Approved by:**

\_\_\_\_\_  
Assistant Secretary, Lands and Minerals  
Department of Interior

\_\_\_\_\_  
Date